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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/319,092 06/18/99 TEWES

M TEWESETAL

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MMC2/0309

EXAMINER

LEE, S

ART UNIT

PAPER NUMBER

2878

DATE MAILED:

03/09/01

Pl ase find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/319,092

Applicant(s)

TEWES ET AL.

Examiner

Shun Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 June 1999 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

DETAILED ACTION

Oath/D clARATION

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not identify the foreign application for patent or inventor's certificate on which priority is claimed pursuant to 37 CFR 1.55, and any foreign application having a filing date before that of the application on which priority is claimed, by specifying the application number, country, day, month and year of its filing. That is, the country for application number 196 49 605.5 should be Germany and not PCT.

Drawings

2. The drawings are objected to because of the reasons indicated on PTO-948.

Correction is required.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 250 words. It is important that the abstract not exceed 250 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

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4. The abstract of the disclosure is objected to because: (a) "Summary" should be "Abstract"; (b) "(to be published together with Fig.1 of the drawing)" should be deleted; and (c) legal phraseology should be avoided. Correction is required. See MPEP § 608.01(b).

5. The disclosure is objected to because of the following informalities:

(a) specification lacks section headings (e.g., Background of the Invention, Brief Summary of the Invention, Brief Description of the Drawing, and Detailed Description of the Invention); and

(b) on pg. 8, line 33, "reproducibility" should probably be "reproducibility".

Appropriate correction is required.

Claim Objections

6. Claims 3, 5, 7, 10, 11, and 13-16 are objected to because of the following informalities:

(a) claims 3, 5, and 11 recites the limitation "the beam path" (there is insufficient antecedent basis for this limitation in the claim);

(b) claims 7 and 10 recites the limitation "the emission beam path" (there is insufficient antecedent basis for this limitation in the claim);

(c) claim 10 recites the limitation "the detector" (there is insufficient antecedent basis for this limitation in the claim);

(d) claims 11, 13, and 14 recites the limitation "the receptacle holder" (there is insufficient antecedent basis for this limitation in the claim);

(e) in claim 13, "accomodate" should probably be "accommodate";

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(f) claim 15 recites the limitation "the laser light" (there is insufficient antecedent basis for this limitation in the claim); and

(g) claim 16 recites the limitation "the collimator" (there is insufficient antecedent basis for this limitation in the claim).

Appropriate correction is required.

7. Claims 19 and 20 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. It is noted that Applicant has filed a Transmittal Letter received 28 May 1999 which indicate one independent claim for a total of 21 claims. Dependent claims 19 and 20 recite intended use of an apparatus and do not recite any additional structures which would further limit the subject matter of claim 1.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 2, 7, 17, and 21 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2 and 7 recite "and/or" and claim 17 recite "it is possible" which is vague and indefinite.

Claim 21 recites the limitation of "at least two optical units" but does not point out the structural connection with the other elements recited in claim 1 from which it depends.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 2, 5, 7, 10, 14, and 18-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Jörgens (US 5,535,052).

In regard to claims 1, 19, and 20, it is noted that intended use as recited in claims 19 and 20 can not be given any patentable weight. Jörgens discloses (Fig. 2) a fluorescence module (C) to be arrayed at an optical connection of a microscope (A, B; column 5, lines 13-16) with a connection (*i.e.*, the connection onto which module D attaches is shown in Fig. 2 but not labeled; see column 6, lines 9-17) to the coupling of the stimulating light (61) and of a pinhole array (46, 44, 45), wherein the coupling connection and the pinhole array are set on a common support body.

In regard to claim 2 which is dependent on claim 1, Jörgens also teaches that the optical connection of the microscope is an optical inlet and/or outlet (column 2, lines 15-19).

In regard to claim 5 which is dependent on claim 1, Jörgens also teaches that a filter array (column 6, lines 14 and 15) and a dichroic beam splitter (36) are arrayed in the beam path before the stimulating light is coupled into the microscope.

In regard to claim 7 which is dependent on claim 1, Jörgens also teaches that at least one optical unit with one dichroic beam splitter (37, 38) and/or one mirror (39) is provided in the emission beam path (column 5, line 63 to column 6, line 8). The fluorescence module of Jörgens lacks dichroic beam splitters position behind the pinholes. Jörgens teaches that for confocal microscopic fluorescence investigations, respective stops (*i.e.*, pinholes) can be position in each of several planes that are confocal with the focal plane of the objective (column 2, lines 64-66). Jörgens teaches that a plurality of reflector slides containing color dividers (*e.g.*, dichroic beam splitters) can be used to set the most varied of wavelength combinations (column 5, line 63 to column 6, line 8). Therefore inherent in the teachings of Jörgens are sliders containing color dividers (*e.g.*, dichroic beam splitters) that can be positioned behind apertures located at a confocal plane in the fluorescence module, in order to perform confocal microscopic fluorescence investigations at the wavelength ranges selected with the color dividers.

In regard to claim 10 which is dependent on claim 1, Jörgens also teaches that a lens array (40, 41, 42) for focusing the emission light on the detector (47, 48, 49) is provided in the emission beam path before a detector (47, 48, 49).

In regard to claim 14 which is dependent on claim 1, Jörgens also teaches that the receptacle holders (*i.e.*, sliders) are provided with at least two frequency-selective filter devices (*i.e.*, fluorescence filter sets; see column 4, lines 7-20).

In regard to claim 18, Jörgens also teaches a microscope with a fluorescence module according to claim 1 (see Figs. 1 and 2).

In regard to claim 21, it is noted that intended use can not be given any patentable weight. Jörgens also teaches that the module is provided with at least two optical units for selecting different fluorescence emission spectra frequency (see column 5, line 63 to column 6, line 8).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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14. Claims 3, 4, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jörgens (US 5,535,052) in view of Engelhardt *et al.* (US 5,903,688) and Chande (US 4,844,574).

In regard to claim 3 which is dependent on claim 1, the modified fluorescence module of Jörgens lacks a collimator for generating a parallel light beam which is arrayed at the support body in the beam path after the coupling connection.

Engelhardt *et al.* teach that it is known in the art that a stimulating light such as from a laser can be feed into a microscope via a flexible light guide (4 as shown in the Fig.) as an alternative to direct feeding in order to isolate mechanical disturbances from being transmitted to the microscope (column 1, lines 15-52). Engelhardt *et al.* also teach (in the Fig.) a connection (7) to the coupling of the stimulating light (1) to an optical module (8) via a flexible light guide (4). The connection (output coupler 7 in the Fig.) taught by Engelhardt *et al.* is known in the art. For example, Chande teaches (Fig. 1) that a typical prior art output coupler comprises of a fiber holder (*i.e.*, coupling connection 102) and a collimator (108) in order to generate a parallel light beam (110). Therefore it would have been obvious to one having ordinary skill in the art to provide an optical fiber output coupler comprising of a collimator in the modified fluorescence module of Jörgens, in order to feed stimulating light into the microscope while isolating the microscope from mechanical disturbances as taught by Engelhardt *et al.* and to generate a parallel light beam as taught by Chande.

In regard to claim 4 which is dependent on claim 3, Engelhardt *et al.* also teach (in the Fig.) that an adjustable lens array (10) for focusing the beam path confocally with the pinhole is provided in the beam path after the output coupler (7) at the support body.

In regard to claim 16 which is dependent on claim 3, the modified fluorescence module of Jörgens lacks a collimator which is tuned to the numerical aperture of the fiber optical waveguide. Chande teaches that the focal length (f_1) and clear aperture (*i.e.*, parallel light beam diameter D_1) of the collimator (108) must be selected in order to intercept the fiber emitted beam (column 3, lines 19-25). It is noted that the numerical aperture is defined as the sine of half the acceptance angle (*i.e.*, see θ_{EM} in Fig. 1 of Chande). Therefore it would have been obvious to one having ordinary skill in the art to match the focal length and clear aperture (*i.e.*, numerical aperture) of the collimator to the emitted beam angle (*i.e.*, numerical aperture) of the fiber in the modified fluorescence module of Jörgens, in order to intercept and collect the fiber emitted beam as taught by Chande.

15. Claims 6, 8, 9, 15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jörgens (US 5,535,052) in view of Engelhardt *et al.* (US 5,903,688).

In regard to claim: 6 (which is dependent on claim 5); 8 and 9 (which are dependent on claim 7); and 17 (which is dependent on claim 14), Jörgens also teaches that dichroic beam splitters (such as 36) should be set into a slider (column 5, line 63 to column 6, line 8) and that filters for selecting the stimulating and/or emission wavelengths are also provided on sliders (column 4, lines 7-20). The fluorescence module of Jörgens lacks an explicit description that the filter array is also set on a

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common receptacle holder that can be inserted removably in the support body together with the beam splitter. However, Jörgens further teaches that a number of combinations of beam splitter and/ or mirrors with associated filters can be mounted in a slider (9) which have switching positions (*i.e.*, inserted removably) in order to select a particular combination of beam splitter and/or mirrors with associated filters (column 4, lines 7-20). Therefore it would have been obvious to one having ordinary skill in the art to set the filters in the same receptacle holder (*i.e.*, slider) as the beam splitter with switching positions in the fluorescence module of Jörgens, in order to select a particular combination of beam splitter and/ or mirrors with associated filters.

In regard to claim 15 which is dependent on claim 1, the fluorescence module of Jörgens lacks coupling the stimulating light via a single mode fiber optical waveguide. Engelhardt *et al.* teach that it is known in the art that a stimulating light such as from a laser can be fed into a microscope via a flexible light guide (4 as shown in the Fig.) as an alternative to direct feeding in order to isolate mechanical disturbances from being transmitted to the microscope (column 1, lines 15-52). Engelhardt *et al.* also teach (in the Fig.) a connection (7) to the coupling of the stimulating light (1) to an optical module (8) via a flexible light guide (4). Engelhardt *et al.* further teach that the laser light used as stimulating light is coupled in through a single mode fiber optical waveguide (column 4, lines 6-8). Therefore it would have been obvious to one having ordinary skill in the art to provide the stimulating light source in the fluorescence module of Jörgens via a single mode fiber optical waveguide, in order to feed stimulating light into the

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microscope while isolating the microscope from mechanical disturbances as taught by Engelhardt *et al.*

16. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jörgens (US 5,535,052) in view of Schalz (US 5,585,964).

In regard to claim 11 which is dependent on claim 1, the modified fluorescence module of Jörgens lacks a detailed description of the receptacle holder (*i.e.*, slider), characterized in that the support body (4) for receiving the receptacle holder (15) is provided with shaped surfaces (25), to which the receptacle holder (15) provided with complementarily shaped surfaces arrayed on the support body in the beam path can be fixed. Schalz teaches that holding elements (*i.e.*, sliders, carriers, or slide-in-modules; see column 2, lines 36-54) have " ... corresponding precision-stop-surfaces ... for the exact positioning of the holding element ... " (see also column 4, lines 21-23). Schalz also teaches that these holding elements are designed to contain optical elements such as fluorescence-dividing cubes with switching positions (column 2, lines 60-67). Therefore it would have been obvious to one having ordinary skill in the art to provide corresponding precision-stop-surfaces in the sliders of the modified fluorescence module of Jörgens, in order to have exact positioning and alignment of the optical elements in the sliders as taught by Schalz.

In regard to claim 12 which is dependent on claim 1, the modified fluorescence module of Jörgens lacks an explicit description of a connection flange for attaching the support body to the connection of the microscope and a support body which is made in one piece from a metallic material. Schalz teaches that modularly designed

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microscopes should be manufactured of metal such as aluminum or brass in a one-piece construction-type in order increase rigidity (column 4, lines 1-25). Schalz also teaches that a modular microscope system makes it possible to attach modules (*i.e.*, support body) via precision attachment surfaces (*e.g.*, connection flange) without additional alignment or optical adjustment (column 6, lines 29-40). Therefore it would have been obvious to one having ordinary skill in the art to manufacture the modified fluorescence module of Jörgens as a metallic one-piece construction-type that can be attached to a precision attachment surface of a modular microscope, in order to have rigid module that can be attached to a microscope without additional alignment or optical adjustment as taught by Schalz.

In regard to claim 13 which is dependent on claim 1, the modified fluorescence module of Jörgens lacks an explicit description that the support body is made with cavities for receiving the receptacle holder, wherein the said cavities have suitable lateral surfaces designed to accommodate the oriented reception of the receptacle holder. Schalz teaches that a carrier (*i.e.*, receptacle holder) has corresponding precision-stop-surfaces (*e.g.*, lateral surfaces of a cavity) for exact positioning (column 2, lines 46-59) without additional alignment or optical adjustment (column 6, lines 29-40). Therefore it would have been obvious to one having ordinary skill in the art to provide cavities with corresponding precision-stop-surfaces in the modified fluorescence module of Jörgens, in order to have exact positioning without additional alignment or optical adjustment as taught by Schalz.

Conclusion


17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US patent 4,729,621 (Edelman) teaches numerical aperture (Fig. 1). A 1996 publication (Volcker et al., "Mikroskopgestützte Fluoreszenz-Photonen-Korrelation", Technisches Messen, 63, pg. 128-135) teaches a modular inverted microscope (ZEISS AXIOVERT 135 TV) configured as a fluorescence correlation spectrometer (translated abstract) with a laser coupled into the back-port of the microscope and a confocal detection module attached to the bottom-port (Fig. 6). A 1991 publication, (Thompson, "Fluorescence Correlation Spectroscopy", Topics in Fluorescence Spectroscopy Vol. 1, pg. 337-378, 1991) teaches that it is known in the art to use microscopes configured in a confocal geometry (*i.e.*, aperture in focal plane) for auto-correlation or cross-correlation fluorescence correlation spectroscopy in order to determine diffusion coefficients such as rotation diffusion coefficients (see Fig. 6.3, line 2 on pg. 345 to line 6 on pg. 346, and paragraph 6.1).

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (703) 308-4860. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seungsook Ham can be reached on (703) 308-4090. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

SL
March 6, 2001



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